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ABSTRACT

Developmentally and Culturally Appropriate Practice (DCAP) is a culturally congruent and critical pedagogy that serves as a framework for early childhood education for all individuals. This paper examines young children's gender differences in learning and their gender-oriented culture and promotes developmentally and culturally appropriate gender-fair and gender-congruent practices in conjunction with young children's naturalist intelligence. Presented in a question-answer format, the paper addresses the following issues: (1) how preschool teachers perceive young children's gender characteristics in class; (2) sex differences in ways children explore nature; (3) how adults respond to young children's naturalist intelligence; (4) intellectually gender-congruent approaches to young children's naturalist intelligence; and (5) teachers' responsive curriculum construction. The paper notes that the meaning of gender-fairness has not been clearly articulated, but is connected with issues of equity, equal opportunity, or multiculturalism. Gender congruent practice means that teachers' critical thinking and curriculum decision-making processes can accept and promote gender-based differences as well as individual differences as equally rich resources in the learning community. Boys and girls require gender responsive learning and development opportunities within a shared environment, one that is supportive of gender congruent play and learning experiences. Teachers' knowledge of contributing influences to children's gender differences is crucial. Because the existence of a feminine bias in preschools influences pedagogical practices, teachers need to be extremely careful to maintain gender-congruent experiences and a gender-fair learning environment. The paper concludes by asserting that it is possible to create a gender-fair learning environment for all young children and that it is long overdue. (Contains 32 references.) (KB)

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Gender-Fair and Gender-Congruent Practices For Young Children's Naturalist Intelligence: From the Perspective of Developmentally and Culturally Appropriate Practice (DCAP)

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Gender-Fair and Gender-Congruent Practices for Young Children's Naturalist Intelligence: From the Perspective of Developmentally and Culturally Appropriate Practice (DCAP)

Purpose:
The purposes of this paper presentation as followed:

1. to help early childhood practitioners understand young children's gender differences in their learning; gender-oriented culture of boys and girls
2. to promote developmentally and culturally appropriate gender-fair and gender-congruent practices in conjunction with young children's naturalist intelligence.

Vocabulary & basic conceptual understandings:
DCAP: Developmentally and Culturally Appropriate Practice (DCAP) is a culturally congruent critical pedagogy that serves as a fundamental framework for early childhood education for ALL individuals. It is an inquiry and process oriented teacher education curriculum that intends to help teachers develop multiple/multiethnic perspective-taking abilities, so that they can incorporate learners' various cultural diversities into their equal, fair and culturally congruent/relevant/responsive teaching. (Hyun & Marshall, in press a; Hyun & Marshall, in press b; Hyun, 2000; Hyun, DiPento, Duarte, Matthews, Morales, & Smrekar. 2000; Hyun, 1998; Hyun, & Marshall, 1997; Hyun, & Marshall, 1996; Hyun, 1996).

Gender-based differences: Young boys' and girls' gender differences driven by not only genetic (nature) influences but also socio-cultural influences (nurture) (Chugani, 1994; Cushner, McClelland, & Safford, 1992; Diamond & Hopson, 1998; Hanlon, 1996; Hines & Green, 1991; Hyun & Tyler, 2000; Sadker & Sadker, 1990; Shore, 1996; Tyler & Hyun, 1999; Wolfe & Brandt, 1998). Thus, the concept of gender-oriented culture of boys and girls are possible to consider; boys' culture vs. girls' culture.

Gender congruent practice: It's teaching and learning that are responsive to the gender-based characteristics to help learners to make sense of the current emerging learning experiences (e.g., a teacher supports/accepts Kevin's dancing act as his way of reading and comprehending the story as he is reading a story from a computer language-art software program; Anna is pointing out to sentences using her fingers on the screen and is talking about the story that she is reading to the teacher who is sitting next to her).

Gender fair practice: It attempts to provide an "equity" or "equal opportunity" to both genders in classroom. It, however, might not guarantee that providing the same opportunity would be congruent for both genders. (e.g., giving the same opportunity of playing computers in a sedentary mode at all times may not fully support the equal opportunity of meaningful learning to the both genders.)

Young children's naturalist intelligence: It refers to as the ability to recognize and classify natural world (e.g., plants, animals, rocks, etc) and cultural artifacts (e.g., cars,

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Pokemon cards, etc). Due to the gender-based differences, boys' and girls' naturalist intelligence may have some unique characteristics that are somewhat different from each other.

Backgrounds:
Previously, two different types of field-based researches were done that were directly related to this discussion (Hyun & Tyler, 2000; Hyun 2000a; Hyun 2000b). The first study used on-site group interviews and survey to investigate teachers' general perception of young children's gender difference. Over 100 early childhood practitioners participated the study. Both qualitative and quantitative data were collected and analyzed. The last study used ethnographical naturalistic field-observations to capture young boys' and girls' (ages 3 –5) naturalists intelligence that were somewhat different from each other due to the mixture of biological and cultural influences (gender-based characteristics). Data were collected qualitatively for over the last six years in three different states (Pennsylvania, Illinois, & Florida) including urban and rural ECE as well as home settings.

How do preschool teachers perceive young children's gender characteristics in classrooms?:
According to Hyun and Tyler (2000), preschool teachers in their study perceive female preschoolers as positive and sensitive learners. While many learner characteristics such as "inventive," "problem-solver," "builder," " hands-on," and "questioning" are identified more often for boys than girls, overall the teachers' perception of the boys' group is less "teachable" and "easy to work with" than the girls group. In addition, one of the most intriguing and concerning observations is that girls are perceived as "passive learners," therefore, they are more "teachable" than boys.

What we think, what we believe, and how we act do interact in important ways. While there may not be a direct correlation between specific thoughts and actions, a teachers' perception that stereotypically describes preschool age boys and girls may affect their daily teaching and interaction with children that are neither gender-fair nor gender-congruent to the young children. Additionally, these perceptions may play a critical role in the teachers' process of curriculum decision making by creating a hidden curriculum. Without realizing the impact, this may lead to a perpetuation of gender struggles in the young child's life.

How are young boys' and girls' ways of exploring nature different? Are they different from adults'?:
H. Gardner (in interview with Checkley, 1997; Gardener, 1999) believes most young children tend to exhibit this particular intelligence in a more "wholistic" and descriptive fashion than most adults, because children experience the natural environment in *a deep and direct manner*, not as a background for events as some adults do (Checkley, 1997; Gardner, 1999; Sebba, 1991; Wilson, 1997).

Source: E. Hyun's Field notes; data collected 1994, State College, PA, at a local preschool playground

Interviewer: What do you see in this playground garden?
A 4-year-old girl: I see small rocks--many, many rocks. I see flowers (touching rocks and flowers). They have different colors. I see a butterfly. It has lines and dots--same in the both sides (pointing to the two wings). Later drew a picture of flower and butterfly.
A 4-year-old boy: I see a big bumblebee buzzing like this (pretends to be a bumblebee and flapping both arms and saying buzzzzzzzz...)! Later drew a picture of butterfly.

Children see pebbles; they play with pebbles; ... they see patterns of the butterfly; they drew the butterfly; they act out bumblebees' buzzing ... The children interact with nature by touching, playing, and pretending as direct manner. There also seems to be some type of gender difference in children's direct manner of exploring nature; the boy tends to be physically engaged with nature, the girl tends to be descriptively engaged with nature.

Interviewer: What do you see in the playground garden?
A preschool teacher: I see trees, soils, benches, some bees, butterflies, flowers, and other insects.

Adults may see trees, the ground, and benches...they see bees and butterflies on flowers—they don't seem to directly interact with nature as the preschoolers do.

How do adults respond to young children's naturalist intelligence? Are adults' responses intellectually congruent to young children's naturalist inquires?:

According to E. Hyun's study (2000a & 2000b), there is a significant gender difference in adults' interaction with young children in their response to the children's naturalist curiosity. It also seems that there is a clear evidence of gender-biased cognitive reasoning by the adults' social-culturally oriented influences. This is a critical issue related to young children's gender differences in the development of their naturalist intelligence.

Early childhood learning experiences depend upon concrete perceptual experiences and information constructed from the direct experiences (e.g., Piaget). In this regard, R. Wilson (1995) and R. Sebba (1991) hypothesize that during the early stage of cognitive development, *perception conducts thought*. In contrast, human adults' way of knowing is mostly based on *perception obeys thought*. The actual field-based data presented in the Table 1 supports Wilson's and Sebba's theoretical understandings.

As illustrated in the Table 1, some adults respond *intellectually incongruent ways* to young children's construction of knowledge about nature. *Children may be exposed to the culture of discourse that is intellectually mismatched between their way of knowing and adults' way of knowing and understanding nature.*

Table 1. How do adults respond to the children's naturalist intelligence?

Perception conducts thought (Child)	***Perception obeys thought (Adult)***
A 3-year old girl looking at a snake: What is this? I see it has no legs. But it moves! I wonder how it moves without legs? (Biophilia)	*Father of the girl: Oh, it's a snake! Don't touch it! It may have some poison. It may kill you or hurt you! (Biophobia)*
A 4-year old boy looking at a snake: It's a snake! I want to touch it! It has black shiny scales! (Biophilia)	*Father of the boy: Move back! It may be a poisonous one. Let me get a stick. We'd better kill it. It's dangerous to have a snake around this area, because you guys are always playing here. (Biophobia)*
A 5-year old girl looking at ants on the surface of an old concrete wall: Ants! They are carrying food (a small piece of bread)!... How do they live inside of this wall? How do they build their home inside of this hard wall? (Biophilia)	*Mother of the girl: These ants make the building get old. They make holes inside of the building or home...We need to spread a bug spray! "The ants killer." (Biophobia)*
A 5-year-old boy looking around a broken red brick which is one of the surrounding bricks of his window, and pointing at the ants carrying cookie crumbs that he had dropped the other day near by the window: How do they carry the big piece of cookie crumb? It is much bigger than its own body size. Cool! Are they like a... "Herculy" on TV? (Biophilia)	*A mother of the boy: Close the window! Do not let those ants come inside of your room. I need to call pest control. They (the ants) may chew this old home down. (Biophobia)*

Source: E. Hyun's field notes, May 1998. Fort Myers, FL (First two discourses), June, 1998, Chicago, IL (Last two discourses)
Note: see E. Hyun (2000a & 2000b) for Biophilia and Biophobia in conjunction with ecological human brain development.

What would be intellectually gender-congruent approach to the young children's naturalist intelligence?:

Young children's early education should include a social-constructive curriculum that responds to, validates, and reinforces the children's naturalist intelligence and is consistent with their gender-based ways of constructing knowledge of nature.

A child question: What is this? I see it has no legs. But it moves! I wonder how it moves without legs?

Adult A: Oh, I've never thought about how snakes can move without legs. It's a good question! I like the way you are thinking! It makes me think of something new! Why do

you think it can move by itself without a lag? Is there anyone who can think of the reason for that? (Social-cognitive & social-affective knowledge construction. It could be considered as a gender-based approach for girls in the presence of the both genders)

OR

Adult B: I wonder how snakes can move without legs? What do you think? How can we find out the answer? Do you have an idea? Can we pretend to be a snake and see whether our body can move without moving legs? ? (Social-cognitive & body-kinesthetic knowledge construction. It could be considered as a gender-based approach for boys in the presence of the both genders)

Teachers' responsive curriculum construction:
Curriculum that promotes young boys and girls naturalist intelligence could be described as an exploratory curriculum practice. Table 2 conceptually describes the highlights of an exploratory curriculum vs. a non-exploratory, closed curriculum.

Table 2. Exploratory Curriculum vs. Closed Curriculum

Exploratory Curriculum	Closed Curriculum (Non-Exploratory)
• Inquiry-based dialogue maintains congruency of the child's intellectual activity	• Teacher-directed dialogue maintains predetermined intellectual activity
• Situated learning occurs with the child's perceptions that are bondings-to-the earth	• Situated learning is presented with the teacher's prepared expectations
• Children's multiple perspectives are shared	• Teacher's single perspective prevails
• Children are active initiators and participants in investigating their own inquiries	• The child is a passive listener in the teacher's premeditated inquiry
• Teachers continuously exercise teachable-moment oriented, negotiated, and emergent curricular notions	• Teachers maintain the prescribed and teacher-expected curriculum

Compared to the closed curriculum, the exploratory curriculum includes the teacher as a member of the constructive learning community who values and responds to the multiple voices from the individual child. Using children's diverse voices is the driving force for the exploratory curriculum. Shared power for decision-making, rather than an ultimate single power, pervasively exists as the culture of the exploratory learning community.

Understanding the differences in the *intellectual processing* (*not intellectual level* typically described by Piagetian researchers) between adults and young children is one of the important areas of study in early childhood education. Critically examining the phenomenon of the intellectual processes that are a mismatch between adults and children is long overdue in the field of early childhood education. In addition, attempts to find a way to make an intellectually congruent learning environment for children's scientific exploration and understanding of nature is crucial in educating young

children. The phenomenon of mismatches between children and adults' linguistic discourse about nature needs to be studied by educators, parents, and community members who work with young children, and also needs to be addressed within early childhood teacher education programs.

Conclusion and Implication:

In U.S. early childhood education, gender-fair learning environments have been identified as an important component in a teacher's daily practice (Cannella, 1997; Derman-Sparks, 1989, Schlank & Metzger, 1997). However, the meaning of gender-fairness or "how to" maintain gender-fairness has not been clearly articulated. Often, gender-fairness is connected with issues of "equity" or "equal opportunity" and "multiculturalism." While recognizing issues of fairness and equity within an oppressive society, we may fail to resolve these issues because we strive to solve these issues within a values system that is a part of the problem.

The two researches are just initial attempts to identify gender bias in early childhood education adults' thinking, and to propose gender congruent and gender-fairness in developmentally and culturally appropriate practice for ALL young children (Hyun, 1998). As Cannella (1997) mentions, males and females are biologically and socially different. Due to both biological (nature) and socio-cultural (nurture) influences, young girls and boys construct somewhat different cultures within their respective gender groups. Gender congruent practice in education means that the teachers' critical thinking and curriculum decision-making processes have an inherent and pervasive capacity for accepting and promoting gender-based differences as well as ALL children's individual-based differences as equally rich resources in the learning community. To bring true gender equity and gender-fairness to education, we must learn more about the biases of adults, and how to create gender congruent practices based on actual differences in children. These practices must allow ALL individuals from both sexes to freely participate in a manner that values one's own human qualities and provides for equal opportunities and fair compensations.

As many educators and researchers have indicated (e.g., Berk, 1997; Kimura, 1992; Mccoby, 1990, 1988; Paley, 1984; Tyler & Hyun, 1999), the culture created by young boys and girls as they play, their learning styles, and communication skills are different from one another. Based on these gender-based differences, young boys and girls require gender responsive learning and development opportunities within a shared environment. Developmentally and culturally appropriate environments that support young boys' and girls' gender congruent play and learning experiences are necessary. In such an environment, the teachers' knowledge of biological brain development and socio-cultural influences in young children's gender differences are crucial.

Girls and boys are different in the classroom as well as in their ways of exploring nature via their naturalist intelligence (see naturalist intelligence in Gardner 1999). Some of these differences are genetic, others are environmental; most are a combination of what one is born with and what one learns. The role of the thoughtful, effective and caring teacher is to find ways to support the natural tendencies and strengths of the child, while at the same time promoting behavior that is socially acceptable and helps the child meet their unique individual needs. The two studies and other previous researches show

that preschool teachers may expect and respond more positively to young children of both sexes for "feminine" rather than "masculine" behavior. In classrooms, obedience is usually valued and teachers generally discourage assertiveness. In the field of early childhood education we see overwhelming number of female teachers. This institutionalized "feminine bias" is believed to promote a certain degree of discomfort for boys in school. Furthermore, as Berk (1997) argues, it may be equally or even more harmful for many girls, who willingly conform, with possible long-term negative consequences for their sense of independence and self-esteem. Because a feminine bias exists and influences pedagogical practices, teachers need to be extremely careful to maintain gender-congruent experiences and a gender-fair learning environment.

As earlier researches have indicated teachers' personal beliefs and stereotypical perception affect their attitudes and classroom practice. It is a hope that the research-based workshop can be a point of departure to continue the process of uncovering early childhood teacher's personal biased-perceptions of young children. With a fairly constructed knowledge of biological and socio-cultural influences in gender-based differences, and by striving to imagine what gender-congruent practices need to look like, it is possible to create gender-fair learning environment for ALL young children. While this is an extremely hard task, it is not only necessary, but long overdue.

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